

# METHOD FOR FORMING HIGH-DENSITY MULTICORE PHASE-LOCKED FIBER LASER ARRAY

## Abstract

A method for forming a multicore fiber laser array includes inserting a plurality of rare-earth doped rods into a corresponding plurality of hollow capillaries, and arranging the resulting plurality of filled capillaries into a preform pattern. The plurality of filled capillaries are collapsed into an initial preform structure, wherein a portion of the material of the capillaries forms an initial inner cladding. The initial preform structure is inserted into a cylinder, wherein the cylinder and the initial preform structure are fused so as to form a final preform structure with a final inner cladding having an increased thickness with respect to the initial inner cladding. At least one flat surface is formed along the length of the final preform structure, and a fiber is simultaneously drawn from the final preform structure and a layer of outer cladding material.